Introduction

- Infantile spasms (IS) is a severe epilepsy diagnosis and infants presenting with IS are an especially vulnerable population.
- Misdiagnosis and inaccurate treatment of IS is potentially tragic, with unsuccessful treatment associated with devastating neurodevelopmental delay and continued epilepsy.
- Subsequently, there has been a significant focus on promoting adherence to evidence based evaluation and treatment guidelines aimed at healthcare providers treating patients with infantile spasms.

Objectives

The objective of this QI project was to:
1. Implement a guideline and electronic medical record order set for inpatient neurology providers caring for patients with infantile spasms (clinical intervention).
2. To determine provider knowledge of the evaluation and treatment of these patients prior to and after a provider meeting reviewing the new guideline (educational intervention).
3. To determine provider adherence to the guidelines using an audit tool.

Methods

- A pre-post test design using an investigator generated pre-post test was used to determine the effect of the educational intervention on provider knowledge.
- A retrospective chart review was completed to evaluate provider adherence to the new guideline and EMR order set with use of an investigator produced audit tool titled the “Infantile Spasms Bundle Tool” on 16 patients prior to and after the clinical intervention.

Setting

- Neurology inpatient floor comprising of a 34 inpatient beds at an urban Children’s hospital.

Sampling

- Educational Intervention: Convenience sample of inpatient neurology providers.
- Clinical Intervention: Data from 16 patients meeting inclusion criteria before and after clinical guideline implementation from 08/01/2018 to 03/01/2019.

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Statistical Analysis

- A paired t-test (alpha=0.05) was used to evaluate change in provider knowledge after educational intervention.
- A retrospective chart review was completed on the 16 patients prior to and after the clinical intervention, and an independent t-test was used to evaluate provider adherence to the guideline.
- All analyses performed using SPSS.

Results

- Educational Intervention
  - Questionnaire scores increased after the educational intervention with a lower pre-test raw score (mean ± SD: 7.13 ± 3.59) compared to higher post-test raw score (mean: 10.96 ± 0.99; p=0.001).
  - Participant scores were also evaluated by question topics including presentation and diagnosis, evaluation, treatment, and monitoring. Questionnaire scores were statistically increased after the educational intervention in all topic categories.

Clinical Intervention

- There was a statistically significant increase in provider adherence to the implemented guideline as evidenced by the Infantile Spasms Bundle Tool audit scores of 16 patients prior to and after the intervention.
  - Mean percentage completion pre-intervention: 65.3%.
  - Mean percentage completion post-intervention: 98% (p-value: 0.025).

Summary

- These findings suggest that after the educational intervention, inpatient healthcare providers were significantly more knowledgeable on evidence based medical care of patients with infantile spasms.

Conclusions

- This QI project demonstrated guideline implementation for inpatient healthcare providers on the treatment of infantile spasms may be useful in providing evidence based care to a larger percentage of patients with time sensitive diagnoses.
- The educational intervention with in-person meeting was successful in increasing inpatient healthcare provider knowledge on a newly implemented guideline on the evidence based treatment of patients with infantile spasms.
- Adherence to the newly established guideline also increased as evidenced through auditing charts with the Infantile Spasms Bundle Tool. Adherence to the newly established guideline may also be related to the educational intervention, but also due to the available EMR order set tool.

Table 1: Infantile Spasms Guideline Provider Questionnaire Scores-Total and TopicSubset Scores*; N=24

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre-Intervention Mean ± SD</th>
<th>Post-Intervention Mean ± SD</th>
<th>p-value</th>
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</thead>
<tbody>
<tr>
<td>Questions 1-3: Presentation &amp; Diagnosis</td>
<td>6.77 ± 2.15</td>
<td>12.52 ± 0.97</td>
<td>.000</td>
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<tr>
<td>Questions 4-6: Evaluation</td>
<td>6.04 ± 3.37</td>
<td>10.05 ± 0.97</td>
<td>.000</td>
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<tr>
<td>Questions 7-9: Treatment</td>
<td>6.2 ± 2.0</td>
<td>10.56 ± 0.89</td>
<td>.000</td>
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<tr>
<td>Questions 10-12: Monitoring</td>
<td>6.75 ± 2.79</td>
<td>12.52 ± 0.89</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Pre- and post-intervention raw scores were analyzed using independent samples t-test. A paired t-test was used to evaluate change in provider knowledge after educational intervention.